Office Action Summary	Application No.	Applicant(s)	
	10/587,180	WAGNER ET AL.	
	Examiner	Art Unit	
	Diana B. Johannsen	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-9 and 11-20* is/are pending in the application.

4a) Of the above claim(s) *11-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-9 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 December 2010* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *part of 20101226* .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FINAL ACTION

1. This action is responsive to the Reply filed October 20, 2010 and the Supplemental Reply filed December 27, 2010. Claims 2-5 and 8 have been amended and claim 20 has been added. Claims 11-19 remain withdrawn (see paragraph 6, below), and claims 2-9 and 20 are under consideration herein. Applicant's amendments and arguments have been thoroughly reviewed and are persuasive in part, as set forth below. However, applicant's amendments have also necessitated the new grounds of rejection herein. Any rejections and/or objections not reiterated in this action have been withdrawn. **This action is FINAL.**

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Applicant's amendments have overcome the following:

a. The new matter objection of paragraph 6 of the prior Office action;

b. The objections to the specification of paragraphs 9-10 of the prior Office action;

c. The requirement to provide an amendment directing entry of the sequence listing, as applicants' amendment of May 30, 2007 was previously accepted by the Office in response to a requirement for such an amendment, and as applicant's Remarks of December 27, 2010 indicate applicant's intent to have the sequence listing of May 30, 2007 entered into the application;

d. The prior rejections of claims 2-9 under 35 USC 112, second paragraph (as applicant has amended the claims to overcome each of these prior rejections);

e. The prior rejection of claims 2-9 under 35 USC 112, first paragraph for lack of written description (as applicant has amended claim 2 to delete items ii) and iv)); and

f. The prior rejections of claims 2 and 4-9 under 35 USC 102 and of claim 3 under 35 USC 103, as applicant has amended claim 2 to delete the broad "hybridizing" language noted in the corresponding rejections of the prior Office action.

Election/Restrictions

4. Applicant's election of Group II and of the combination of oligonucleotides of SEQ ID NOS 72-73, 76-81, 84-91, and 5-63 in the reply filed on April 26, 2010 is again acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

5. In view of applicant's amendments to claim 1 to delete elements (ii) and (iv) of the prior version of claim 2, the claims are now free of the prior art with respect to the elected combination of oligonucleotides. Accordingly, examination has been extended to additional species, and prior art is now applied against the claims with respect to another species embraced thereby, a microarray device including oligonucleotide probes consisting of or including instant SEQ ID NO: 76. It is noted that the claims

continue to embrace numerous different species, and that additional species have been considered only to the extent necessary to determine patentability (i.e., the search has not been extended to other non-elected species as such a search is unnecessary to establish that the claims remain unpatentable; see MPEP 803.02). The claims remain unpatentable in view of the prior art applicable to SEQ ID NO: 76 (see rejections below).

6. Claims 11-19 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 26, 2010.

Drawings

7. The replacement drawings filed October 20, 2010 (and filed again December 27, 2010) are objected to because Figures18a-b and 19a-c are not sufficiently clear for printing purposes (as these figures include both excessively light and excessively dark areas). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

THE FOLLOWING ARE NEW GROUNDS OF REJECTION NECESSITATED BY APPLICANT'S AMENDMENTS:

8. Claims 2, 4-6, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rubenfield et al (US 6,551,795 B1 [22 April 2003]).

Independent claim 2 is directed to a "Microarray device comprising a support element, on which oligonucleotide probes are immobilized on predetermined regions, for specifically detecting strains of the species *Pseudomonas aeruginosa*, wherein the oligonucleotide probes are selected from" any of the list of numerous different probes recited in the claim (such that the claims encompass devices including multiple copies of any individual listed probe as well as any combination thereof). It is noted that the claim as amended has been limited to oligonucleotides consisting of any of the sequences of (i) or oligonucleotides "differing from one of the oligonucleotides under i) in that they are extended by at least one nucleotide" (i.e., any oligonucleotide including the sequence(s) of the oligonucleotides of (i)).

Rubenfield et al teach a library of several thousand *P. aeruginosa* nucleic acids, as well as fragments of each nucleic acid, which nucleic acids and fragments are disclosed as being useful in methods of detecting *P. aeruginosa* species (see entire

reference, particularly col 2, lines 15-59, col 7, lines 45-59, and col 16, line 32-col 19, line 57). More particularly, Rubenfield et al teach the nucleotide sequences of "SEQ ID NO:1-SEQ ID NO: 16571" as well as fragments thereof, and teach providing those nucleic acids for uses including detection of *P. aeruginosa* species (see, e.g., col 2, lines 15-59). Rubenfield et al teach preferred nucleic acids "at least about 15-20 nucleotides in length, that correspond to a subsequence of any one of SEQ ID NO: 1-SEQ ID NO: 16571 or complements thereof" (col 7, lines 45-52). As Rubenfield et al teach nucleic acids including 15-20 nucleotides that correspond to subsequences of any of SEQ ID NOS 1-16571 of Rubenfield et al, Rubenfield et al disclose oligonucleotides that meet the requirements of the claims. For example, fragments of SEQ ID NO: 13,011 of Rubenfield et al include instant SEQ ID NO: 76; see nucleotides 441-463 of SEQ ID NO: 13,011.

(It is noted that while the claims encompass any of the oligonucleotides of claim 2 individually, and that SEQ ID NO: 76 has been specifically addressed herein, Rubenfield et al also disclose other oligonucleotides meeting the requirements of the claims. For example, nucleotides 729-750 of SEQ ID NO: 3154 are identical to instant SEQ ID NO: 78, nucleotides 476-498 of SEQ ID NO: 15,594 are identical to instant SEQ ID NO: 81 and nucleotides 1048-1071 of the SEQ ID NO: 15,594 are identical to instant SEQ ID NO: 85. Any of these representative sequences of Rubenfield et al (as well as combinations thereof) are sufficient to meet the claims. As indicated above, the search of the claims has been extended only to the extent necessary to determine patentability,

such that only a representative group of probes was considered to reach a determination with respect to patentability of the amended claims).

While Rubenfield et al do not disclose a microarray device including the specific oligonucleotides referenced above, Rubenfield et al do disclose that the "nucleic acid sequence of the present invention may be used to detect *P. aeruginosa* or other species of *Pseudomonas* acid sequence using bio chip technology" (col 42, lines 35-37). Rubenfield et al further disclose that "Bio chips containing arrays of nucleic acid sequence" can be used to assay *P. aeruginosa* gene expression, infection diagnosis, etc." It is noted that the bio chips disclosed by Rubenfield et al inherently constitute microarray devices that comprise a "support element" (as such an element is inherently required of any "biochip"); further, as was noted in the prior Office action, each region of a microarray containing a particular probe is inherently "predetermined" in some fashion by the individual preparing the array. In view of Rubenfield et al's own teachings, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have prepared a bio chip (i.e., a "microarray device") including any or all of the nucleic acids disclosed by Rubenfield et al, including those specified above that correspond to oligonucleotides of the instant claims. An ordinary artisan would have been motivated to have made such a modification because Rubenfield et al teach that such bio chips will be useful in a variety of applications (including detection of *P. aeruginosa*). Regarding the claim 2 recitation "for specifically detecting bacterial strains of the species *Pseudomonas aeruginosa*," it is noted this recitation constitutes an intended use of the claimed product that does not result in any structural difference

between the claimed invention and the prior art (particularly because Rubenfield et al teach the use of their nucleic acids and bio chips in such detection).

Regarding claim 4, as the claim is drawn to a product (rather than a method employing particular conditions), the microarrays suggested by Rubenfield et al meet the requirements of the claim, as those microarrays could be employed in any of a variety of ways, including the use of conditions that meet the requirements of the claim. Regarding claims 5-6, as the microarrays suggested by Rubenfield et al include oligonucleotides having the exact structural properties required by claim 2, those oligonucleotides inherently possess the functional characteristics of these dependent claims. With further regard to claim 20, it is reiterated that Rubenfield et al teach oligonucleotides meeting the requirements of (i) of claim 2 (such that Rubenfield et al suggests the device of claim 20 for the same reasons noted above).

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rubenfield et al, as applied to claims 2, 4-6 and 20, above, and further in view of Schultz et al (WO 03/059,519 A1 [24 July 2003]; cited in IDS).

The teachings of Rubenfield et al are set forth in the preceding paragraph. While Rubenfield et al suggest a microarray meeting the requirements of the claim, Rubenfield et al do not disclose a device in which the microarray constitutes a support element arranged on a "base area" of a reaction tube, as required by claim 3.

Schultz et al disclose a "reaction vessel for carrying out array processes," wherein the vessel "comprises a scale and form typical of a laboratory reaction vessel, whereby a support element is arranged on the base surfaces of said vessel, with probe

molecules immobilized on given regions thereof" (see abstract and cover Figure illustration). Thus, Schultz et al teach a device having the form required by claim 3. In view of the teachings of Schultz et al, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have modified the microarray of Rubenfield et al so as to prepared a device in which the microarray is present on the base surface of a vessel as taught by Schultz et al, i.e., to have substituted the vessel-form microarray of Schultz et al for the standard microarray form taught by Rubenfield et al. An ordinary artisan would have been motivated to have made such a modification/substitution so as to have achieved the predictable result of providing a microarray readily usable in reactions facilitated by the presence of the microarray in tube form, such as centrifugation.

Claim Rejections - 35 USC § 112, first paragraph

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

THE FOLLOWING ARE NEW GROUNDS OF REJECTION NECESSITATED BY APPLICANT'S AMENDMENTS:

11. Claims 7-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It

is noted that this rejection applies to the new species now under consideration herein, which corresponds to SEQ ID NO: 76 (recited in independent claim 2).

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to: (A) the breadth of the claims; (B) the nature of the invention; (C) the state of the prior art; (D) the level of one of ordinary skill; (E) the level of predictability in the art; (F) the amount of direction provided by the inventor; (G) the existence of working examples; and (H) the quantity of experimentation needed to make or use the invention based on the content of the disclosure. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) (*MPEP* 2164.01(a)). It is noted that the examiner has considered all of the evidence related to each of these factors, and that those factors, reasons and evidence that have led to a conclusion that enablement is lacking are discussed below (*MPEP* 2164.04).

The species now under consideration herein is a microarray device requiring probes comprising instant SEQ ID NO: 76. Unlike the device of the originally elected species (which required a large and diverse group of probes), it is unpredictable as to whether a device requiring probes of SEQ ID NO: 76 could be employed to achieve the functions specified in dependent claims 7-9, which require probes specific for pathogenicity islets (claim 7), disease associated genes comprising exoS and exoU (claim 8), and genes coding for flagella (claim 9). The specification provides specific guidance with regard to which particular probes of the invention meet the functional

requirements of claims 7-9; see pages 18-19, teaching probes "suitable for detecting pathogenicity islets" (noting that SEQ ID NO: 76 is not so disclosed); page 19 teach probes "suitable for detecting disease associated genes like exoS and exoU" (noting that SEQ ID NO: 76 is not so disclosed); and page 19 teaching probes "suitable for identifying the flagella type" (noting that SEQ ID NO: 76 is not so disclosed). The specification at page 16 teaches that SEQ ID NO: 76 is suitable "for specifically detecting SNPs." Thus, based on the guidance provided in the specification, one skilled in the relevant art would not expect to be able to use instant SEQ ID NO: 76 to achieve any of the functions specified in claims 7-9. Lacking guidance from the specification, one of skill in the art may look to the teachings of the prior art for further enabling guidance. However, in the present case, the prior art is silent with regard to the use of a sequence consisting of or comprising instant SEQ ID NO: 76 for any of the functions specified in claims 7-9. Thus, given the apparent lack of any association between SEQ ID NO: 76 and any of the properties specified in these claims, one of skill in the art would not expect that even an exhaustive amount of experimentation would be sufficient to enable the use of SEQ ID NO: 76 in specific detection of the types of genes recited in claims 7-9. As such a type and quantity of experimentation is clearly undue, enablement is lacking for claims 7-9 as they are drawn to the new species of SEQ ID NO: 76.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diana B. Johannsen whose telephone number is 571/272-0744. The examiner can normally be reached on Monday-Friday, 8:30 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nguyen can be reached at 571/272-0731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diana B. Johannsen/
Primary Examiner, Art Unit 1634